

REMARKS

In the Official Action, the Examiner rejects Claims 1-16 and 18-25 under 35 U.S.C. § 112, first and second paragraphs, as failing to comply with the written description and definiteness requirements. In addition, the Examiner rejects Claims 1-16 and 18-25 under 35 U.S.C. § 103(a) as being unpatentable over the admitted state of the art in view of U.S. Patent No. 5,893,683 to Johnson, U.S. Patent No. 5,816,754 to Shallenberger, U.S. Patent Application Publication No. 20020168241 to David et al., and U.S. Patent Application Publication No. 20050015980 to Kottilingam et al.

Applicants have amended independent Claims 1 and 13 to further patentably distinguish the cited references. Therefore, in light of the claim amendments and subsequent remarks, Applicants respectfully request reconsideration and allowance of the claims.

With respect to the § 112 rejections, the Examiner finds that term "shallow" relief angle recited in independent Claims 1 and 13 is new matter, and it is allegedly unclear what angles are encompassed by the term shallow. The term "shallow" has been deleted from Claims 1 and 13. In addition, independent Claims 1 and 13 have been amended to recite that the routing is performed with a router bit that comprises at least one cutting edge having a relief angle between 0 and approximately 3 degrees for defining a conical bottom surface. Thus, as shown in Figure 3 of the present application, each cutting edge has a relief angle A that defines the conical bottom surface 22 depicted in Figure 7. The shallow relief angle of between 0 and about 3 degrees ensures that a minimal amount of material is removed during routing, which is unlike the cited references. Therefore, Applicants submit that the rejections of Claims 1-16 and 18-25 under 35 U.S.C. § 112 are moot in light of the amendments to independent Claims 1 and 13.

In addition, dependent Claims 6 and 19 have been canceled such that the rejection of Claims 6 and 19 under 35 U.S.C. § 112 is also moot. The Examiner found that canceled Claims 6 and 19 contained new matter because the claims were amended to recite a relief angle of between 0 and 3 degrees, which the Examiner believes includes a relief angle equaling 3 degrees and that was allegedly not disclosed in the specification. In light of the incorporation of Claims 6 and 19 into respective independent Claims 1 and 13, Applicants address this particular rejection to the extent that this rejection carries over to amended Claims 1 and 13.

In this regard, Applicants respectfully disagree that the amendment to Claims 1 and 13 introduces new matter, as the specification discloses that “the cutting edges 24 of this embodiment of the router bit 14 have a relief angle A of approximately less than three degrees, such that the conical bottom surface of a cutout also correspondingly defines an interior angle in excess of 174 degrees.” Page 8, lines 16-19. Thus, the specification states that the relief angle may be *approximately* less than 3 degrees, which could include a relief angle equaling 3 degrees, such that no new matter is recited in amended Claims 1 and 13. Moreover, Applicants note that the use of relative terms such as “approximately” have been held to be definite (*see* MPEP § 2173.05(b) and *Ex parte Eastwood*, 163 USPQ 316 (Bd. App. 1968) (stating that “the term [about] is clear but flexible and is deemed to be similar in meaning to terms such as ‘approximately’ or ‘nearly’”), and that the term “between” has been held to be a range separating two values rather than a range including the two values. *See e.g., Elekta Instrument S.A. v. O.U.R. Scientific Int’l, Inc.*, 214 F.3d 1302 (Fed. Cir. 2000). Thus, the numerical range of between 0 and approximately 3 degrees would be interpreted to include those relief angles that are greater than 0 and less than about 3 degrees, which could include 3 degrees. As such, Applicants submit that the amendment to independent Claims 1 and 13 does not add new matter.

Furthermore, Applicants respectfully submit that none of the cited references discloses routing a workpiece with a router bit including at least one cutting edge having a relief angle between 0 and approximately 3 degrees for defining the conical bottom surface, as recited by independent Claims 1 and 13. The Examiner relies on Shallenberger as disclosing a router bit having a shallow relief angle. In particular, Shallenberger discloses an elongated drill having replaceable cutting inserts. The drill includes a length-to-diameter ratio of at least 4:1, and the cutting edge of each insert is inclined at a lead angle of about 8 degrees. However, Shallenberger does not disclose a relief angle between 0 and approximately 3 degrees, as recited by independent Claims 1 and 13

With respect to the remaining cited references, Johnson does not disclose a relief angle at all, as the routed portion of Johnson defines a flat bottom surface. Furthermore, even though Kottlingam discloses a conical shaped groove, there is no teaching or suggestion as to a cutting edge and associated relief angle for forming the groove. David also does not disclose the specific configuration of the router cutting edges and whether the router cutting edges include

relief angles. Since none of the cited references discloses that routing is performed with a router bit including at least one cutting edge having a relief angle between 0 and approximately 3 degrees for defining a conical bottom surface, no combination of the references discloses a router bit that includes at least one cutting edge having a relief angle between 0 and approximately 3 degrees for defining a conical bottom surface.

In the Office Action, the Examiner also eludes to the fact that it would have been obvious to one of ordinary skill in the art to optimize "the precise relief angle and corresponding conical angle of the bottom surface." Applicants respectfully disagree, as the specification of the present application indicates that a shallow relief angle ensures that a minimal amount of material is removed for repairing defects, such as drill sports, scratches, or shallow surface blemishes. Shallenberger simply discloses that a lead angle is used to cut the center portion of the bore before cutting the peripheral portion and to facilitate penetration into the workpiece. In fact, a smaller relief angle would render initial penetration into the workpiece more difficult. As such, one of ordinary skill in the art would not look to Shallenberger nor any of the remaining cited references to determine that a relief angle of between 0 and approximately 3 degrees would be desirable.

Therefore, the rejections of independent Claims 1 and 13 under 35 U.S.C. § 103(a) over the cited references are overcome. As such, it is submitted that the pending dependent claims are allowable for at least those reasons discussed above with respect to independent Claims 1 and 13, respectively.

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CONCLUSION

In view of the amendments and remarks presented above, Applicants submit that the present application is in condition for allowance. As such, the issuance of a Notice of Allowance is therefore respectfully requested. In order to expedite the examination of the present application, the Examiner is encouraged to contact Applicants' undersigned attorney in order to resolve any remaining issues.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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